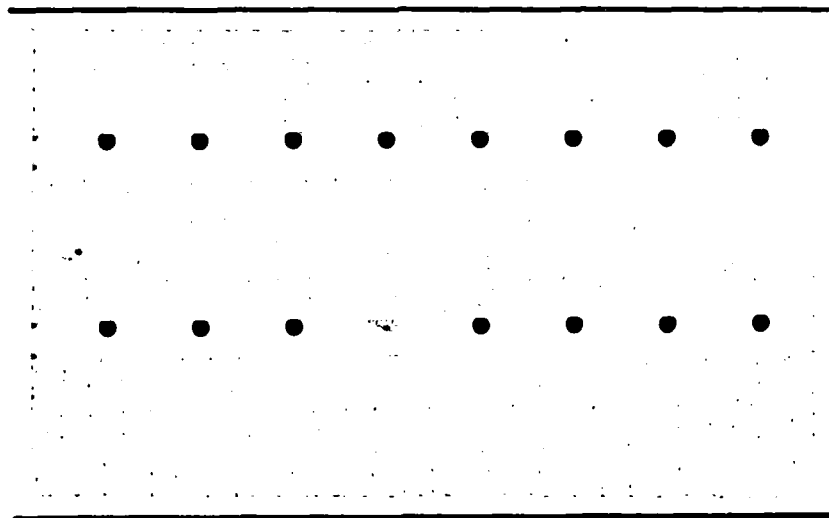


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This report was prepared under the Navy Manpower R & D Program  
of the Office of Naval Research Contract N00014-78-C-0530.

THE NAVY ENLISTMENT FIELD MARKETING EXPERIMENT

VOLUME 1

EXECUTIVE OVERVIEW AND SUMMARY

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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER  TR#1	2. GOVT ACCESSION NO.  AD-A120503	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) The Navy Enlistment Field Marketing Experiment Volume 1: Executive Overview and Summary		5. TYPE OF REPORT & PERIOD COVERED Final Report 6/15/78 - 12/31/81
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s)  Vincent P. Carroll Ambar G. Rao		8. CONTRACT OR GRANT NUMBER(s)  N00014-78-C-0530
9. PERFORMING ORGANIZATION NAME AND ADDRESS Wharton Applied Research Center University of Pennsylvania Philadelphia, PA 19104		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS  62763N, RF63-521-802 NR 156-074
11. CONTROLLING OFFICE NAME AND ADDRESS Office of Naval Research (Code 442) 800 North Quincy Street Arlington, VA 22217		12. REPORT DATE October 15, 1982
		13. NUMBER OF PAGES 32
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report)
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report)  Distribution of this document is unlimited. Reproduction in whole or in part is permitted for any purpose of the United States Government.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES  Supported by Office of Naval Research Manpower R&D Program.		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)  Marketing Experiment; Recruiting Resources; Enlistment		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report is Volume 1 of a large scale field marketing experiment conducted over a three year period. This research was designed to measure and quantify, where possible, the effectiveness of Navy recruiting resources. The back- ground of this research effort is presented in this report, together with a discussion of the experimental methodology and of the choice of measured endogenous and exogenous variables. This is followed by a short description of the collected data, and of the measurement techniques employed. Observed		

responses to experimental and environmental variables are briefly presented. This leads to an identification of the factors which affect military enlistments, and to an estimation of the magnitude of their effects. The effects of key marketing variables over time is examined. There follows a summary of supporting data obtained through tracking studies of perceptions, attitudes, and demographics. A conclusion discusses observed marginal costs and effects of the various treatments, and suggests implications for future resource allocation.

## Table of Contents

### **I. INTRODUCTION**

### **II. OVERVIEW OF RESEARCH**

- A. Background**
- B. Objectives of Research**
- C. Methodology**
- D. Design of Experiment and Surveys**
- E. Execution of Experiment**
- F. Delivery of Experimental Treatments**
- G. Analysis Methods**

### **III. SUMMARY OF KEY FINDINGS**

### **IV. DESCRIPTION OF UNDERLYING RESEARCH REPORTS**

## **ACKNOWLEDGEMENTS**

The Wharton Applied Research Center is grateful to many individuals for their contributions to our research efforts. The participation and contribution of a number of people was truly outstanding and requires special mention.

The Steering Committee which closely monitored and guided this effort:

Admiral Edward Briggs, Admiral F.H. Miller, Dr. Glen Bryan, Dr. Bert King, Dr. Wallace Sinaiko, Dr. Albert Martin, Dr. Bernard Rostker, Ms. Mary Snavelly-Dixon, Col. John Cirie.

Officers of the Navy Recruiting Command who acted as Project Managers for this research during one or more of its phases:

Capt. Julia J. DiLorenzo, Capt. Charles D. Hawkins, Cmdr. Henry Levien, Cmdr. Pieter Van Winkle, Mr. J.J. Miller.

Also:

Dr. James Emshoff, Dr. Christopher Ritz, Ms. Judy Grudfest, Mr. Paul Nickens, Ms. Helen Haggard, Admiral Dewitt Freeman (USN,Ret.), Capt. James Wortman, Mr. Ronald Levaris, Mr. Louis Martinides and his colleagues at the Ted Bates Advertising Agency, and men and women of the field recruiting force too numerous to mention.

## 1. INTRODUCTION

This report is intended to be a non-technical synthesis of a large scale field marketing experiment conducted by the Wharton Applied Research Center in conjunction with the United States Navy Recruiting Command. The marketing experiment was supported by three sequential research contracts funded through the Office of Naval Research. Additionally, substantial funding was provided by the Department of Defense and the Navy as authorized by the Congress to effect changes in advertising expenditure levels and recruiter presence in selected market areas. Finally, the support and participation of a large number of individuals and organizations from the defense manpower network were necessary for the completion of this project. This report is aimed at providing a generalized level of feedback to these diverse groups.

More detailed and technical representations of the material presented in the following pages is included in the other six volumes that comprise this report set. A brief description of these reports is contained in the last section of this document.

At a general level, we would urge an adaptive stepwise approach to the implementation and application of the findings presented here. At the extreme, a single period optimization procedure based on these findings would require oversimplification of the underlying executional issues and could endanger long term recruiting effectiveness. This danger is present because of several lags which are embedded in the current system and which condition the ability of the system as a whole to adapt to new conditions. The lags involved in vary in nature from those attendant to the Congressional budgeting procedure

to those involved in deriving benefit from an expenditure. Recruiter learning periods and advertising lead times are examples of the latter. We believe that this research is most useful to provide direction for stepwise policy decisions. Ideally continued testing, monitoring, and feedback would accompany such changes.

More specifically, then, we believe that interpretation and application of the findings outlined in this report can be best approached in conjunction with the management team at the Navy Recruiting Command and with the Recruiting Resources Allocation Study Steering Group. Both of these groups have in-depth familiarity with the research agenda presented here and a rich appreciation of the broader context of the recruiting environment.



## II. OVERVIEW OF RESEARCH

### A. Background

This research effort began in mid 1978 amid increasing concerns about the ability of the All Volunteer Force to meet the defense manpower requirements of the nation. The economy was up and enlistments in the Armed Forces were down. Several services (active or reserve) confronted enlistment shortages and, consequently, shortages in ending strength levels. The quality of enlistments was an issue because of the qualifying test scores and the high school graduation status of enlistees. Further, the population of 18 year-olds was reaching a cyclical peak and demographic forecasts predicted a steady decline of the prime age cohort for military enlistments (17-21 year-olds) over the next decade.

Among the alternative responses of policymakers to these concerns was increased and/or improved levels of communications, marketing and sales effectiveness in recruiting enlistees. The cost-effectiveness of many existing recruiting programs, however, had long been at issue. Recruiting and advertising budgets for each armed service were identified as special interest line items in the congressional budgeting process. Advertising for Armed Service enlistments on paid electronic media had been recently authorized by Congress (1976). A prototype joint-services advertising campaign had been developed and was being seriously debated. Individual service requests for budget supplements to meet threatened enlistment shortfalls proliferated.

This research program was proposed to examine the general question of marketing effectiveness in one branch of the Armed Services and to quantify, if possible, the relationships between enlistment achievement and marketing expenditures. The vast majority of these expenditures are concentrated on the

maintenance and support of the field recruiting force and on various types of paid advertising.

### **B. Objective**

There were, then, two objectives for this research program as follows:

- To estimate a marketing effort response curve (as measured by the number of Navy enlistment contracts at various quality levels) to overall changes in:
  - (a) the Navy advertising budget level
  - (b) the size of the Navy recruiting force
  - (c) a combined change in both policy variables
- To create a research design and to conduct such supplemental tracking, data collection and analyses as to reasonably maximize the information about other recruiting policies and practices that effect recruiting success.

### **C. Methodology**

A body of previous or concurrent research had been undertaken by the Navy and DOD. These included efforts by Fernandez [1], Goldberg [2], Hanssens and Levien [3], and Morey and McCann [4], as well as several efforts internal to the Navy Recruiting Command itself which retrospectively examined the relationships between enlistments and various factors.

These efforts provided valuable insights and direction for our efforts. All such analyses of historical data are constrained to some degree by the nature of the data used, however. Conceptually, three constraints were of most concern. These were

1. Independence. Too frequently marketing resources are allocated based on sales in prior periods. It is then difficult to determine whether marketing effort causes sales or if sales cause marketing efforts. Further, marketing variables themselves may not be allocated independently of one another. Recruiting and advertising may be increased or decreased in the same market or at the same times. Effects of individual variables are thus difficult to ascertain.
2. Variance. The range of observation for a given marketing variable is frequently quite narrow in historical data. This affects the usefulness of the results in making decisions beyond current policy ranges.
3. Measurement. Key data are often not available in sufficient detail or disaggregation for analysis.

To counter these constraints a one year field experiment was proposed as follows:

1. Advertising and recruiters were to be varied in a systematic and controlled way. They were to be varied independent of sales in prior periods. They were to be varied with treatments independent of one another.
2. A broad range of each treatment variable was to be tested and treatments were to be replicated in multiple markets.
3. A substantial body of supplemental data was to be collected for each market involved in the experiment. These included both sales and marketing data for the other (competing) branches of the Armed Forces. In addition

a two wave survey research program was to be conducted in selected markets of the experiment.

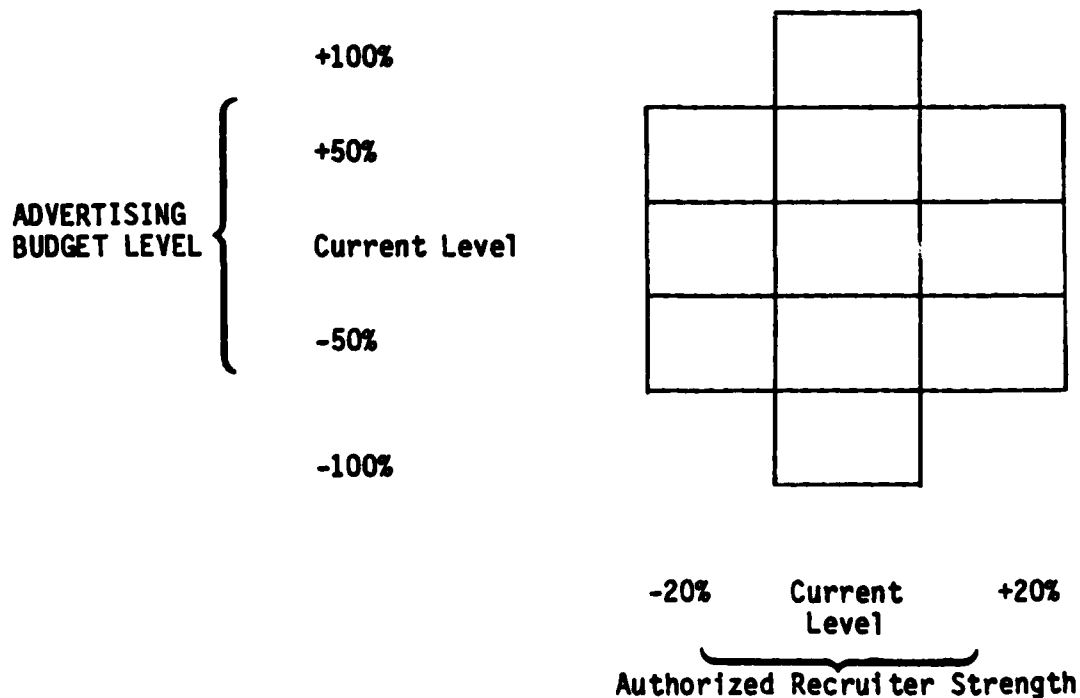
D. Design

The Area of Dominant Influence (ADI) was selected as the unit of analysis for the experiment. Individual counties are assigned to ADIs by the electronic media-rating services based on media-use patterns of sampled households. ADIs offered the most reliable way of executing and measuring the changes in electronic advertising incorporated in the experiment.

Of the over 200 ADIs in the United States a subset was selected for experimental treatment. The treatment objective was to expose individuals in the treatment markets to the level and type of advertising and recruiters to which they would be exposed under the alternative budget levels being tested. The scheme for treatment is represented in Figure 1.

Figure 1

DESIGN OF EXPERIMENT



Three markets were assigned to each of the 11 treatment conditions with the following exceptions: one market was assigned to each of the 100% change in advertising treatments; an additional 14 control markets were closely monitored--these markets received no change in either recruiters or advertising. Experimental treatments were imposed in 26 markets, then, and a total of 43 markets were involved as control or treatment markets.

Individual markets were assigned to treatment conditions by the Wharton Applied Research Center team. The procedure used included:

- Classifying all markets in terms of the levels of Navy enlistment accessions achieved in each of the past three years. This classification examined both the level of overall military enlistments and the Navy's share of those enlistments and was used to match markets.
- Excluding from consideration a number of markets in which special enlistment programs were being field tested. These special programs included reduced enlistment tour obligations and enhanced veterans education benefits.
- Excluding from consideration a small set of markets because of technical factors such as the amount of advertising "spilled" out of the market.
- Random assignments of the remaining matched markets into treatment conditions. This insured that markets with a variety of previous "share" and "level" conditions were exposed to each treatment condition.

Figure 2 shows the actual markets selected and the treatment conditions imposed.

Figure 2

EXPERIMENTAL MARKETS AND TREATMENT CONDITIONS

AD +100%		Davenport-Rock Island	
AD +50%	Tulsa Roanoke Syracuse	Washington Indianapolis Richmond	Boston St. Louis Charleston-Huntington
AD Same	Baltimore Cheyenne, WY Laurel, MS	Los Angeles Providence Terre Haute Springfield, IL*	Harrisburg South Bend Grand Junction, CO
AD -50%	Wilkes Barre Phoenix Odessa-Midland	Chicago Pittsburgh Columbus, OH	Dallas Louisville Lansing
AD -100%		Johnstown-Altoona	
	Recruiters -20%	Recruiters Same	Recruiters +20%

\*Secondary control markets:

Nashville  
Columbus  
Charlotte  
Greenville  
Knoxville  
Des Moines  
Youngtown

West Palm Beach  
Chattanooga  
Huntsville  
Waco  
Sioux City  
McAllen  
Anniston

From Figure 2 we see that Boston, for example, was to receive increases in both advertising and recruiter strength; Los Angeles was to receive no change in either advertising or recruiter strength, and Phoenix was to receive decreases in each. Markets such as Washington, Baltimore, Chicago and Harrisburg were to receive changes in just one treatment variable.

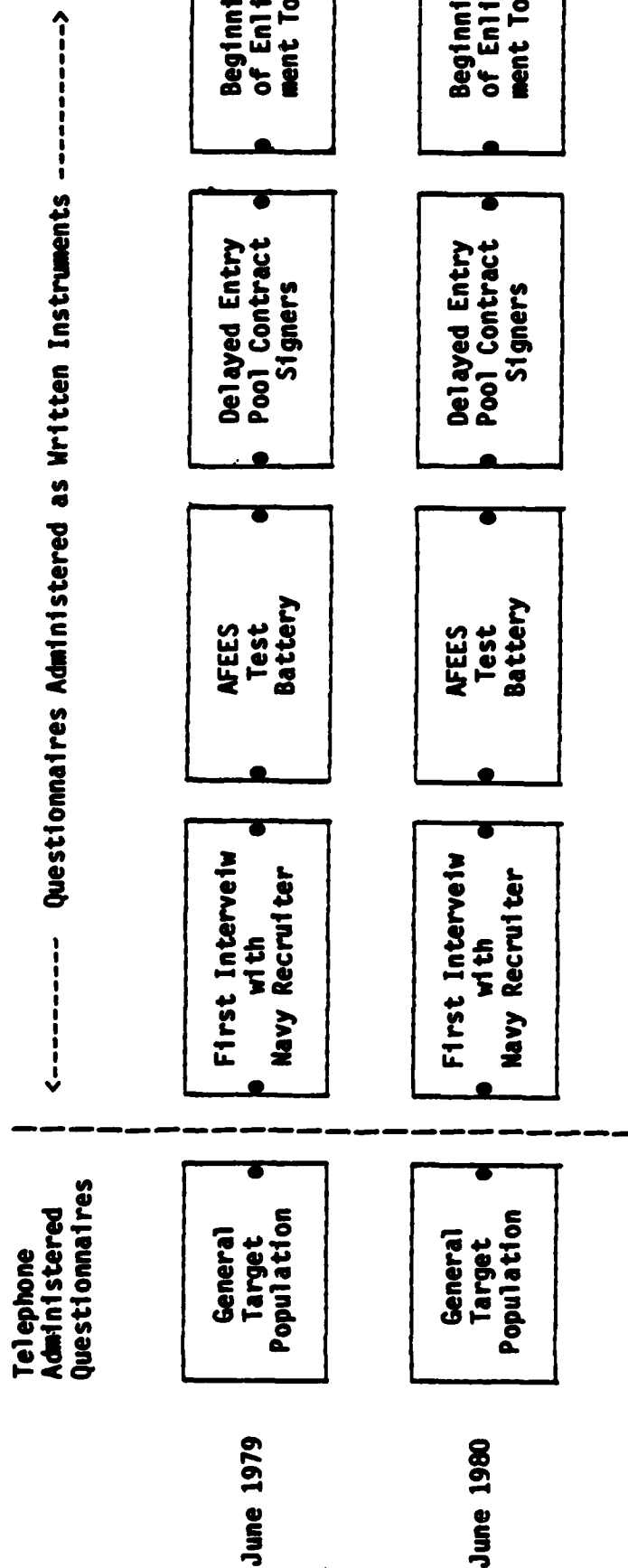
Additionally, the three markets in each of the four corners of Figure 1 were used as the sample markets for the two wave survey research program. The questionnaire battery was designed to:

- Enable the identification of any obstruction between the two marketing control variables, recruiters and advertising. It was at least conceptually possible that one variable's effectiveness could be offset by the other.
- Provide measures of the impact of recruiter and advertising treatment on a range of intermediate measures. These measures include: awareness of advertising, recruiter contact, attitudes towards a variety of "life goals", perceptions of the Navy, and intentions to enlist or progress in the recruiting process.
- Enrich our understanding of the recruiting environment and process.

To achieve these aims, respondents were sampled at a variety of points in the recruiting cycle. Figure 3 graphically presents the sampling schema. Separate, independent samples were drawn at each point in the process. Questionnaires were administered in June of 1979 (Wave I) before any experimental intervention and again in June 1980 (Wave II), nine months into the experiment. The general target population questionnaire was administered by

**Figure 3**

**SAMPLING SCHEMA FOR QUESTIONNAIRE ADMINISTRATION**



General target population defined as 17 to 21 year-old men and 18 to 24 year-old women

● = Sampling point

Two ● = Split Sample--before and after activity



telephone using random digit dialing techniques. All other questionnaires were administered by Navy Recruiting or AFES test station personnel in the form of written instruments. It is useful to note here that the enlistment buying cycle is unique in that it is virtually prescribed. Enlistees must proceed to each stage sequentially. Table 1 outlines the major groups of questions contained in both the written and telephone questionnaires.

Table 1

QUESTIONNAIRE GROUPS OF QUESTIONS

- I. Demographics of respondents
- II. Current activity of respondent  
Planned activity of respondent
- III. The importance of various factors (life goals)  
to the respondent in job or activity selection
- IV. Stated likelihood of joining the Armed Forces  
and top two choices by Branch of Service
- V. Perceptions of the Armed Forces in general  
and the Navy in particular with respect to  
the factors (life goals) observed in Section III
- VI. Sources of information about military and Navy  
enlistment opportunities and programs

E. Execution

To execute the experimental design, the test budget levels first had to be broken out into broad program areas to reflect the way these budget levels would actually have been spent. Table 2 presents this breakout for the advertising budget levels being tested. Recall that the design concept was to expose individuals in treatment markets to the advertising and recruiter exposure which would be present in those markets if the test budget

Table 2

ALLOCATION OF NAVY ADVERTISING BUDGET AT VARIOUS TEST LEVELS

Advertising Programs	Advertising Budget Level	Extra Low -100%	Low -50%	Normal	High +50%	Extra High +100%
Local Advertising		0	3.4 [37]	2.25 [12]	3.9 [14]	4.5 [12]
Recruiter Assistance Documents (Point of Sale Material)		0	2.9 [31]	2.3 [12]	3.5 [13]	4.0 [11]
Public Service Advertising (Production and Distribution)		0	.7 [8]	.5 [3]	.75 [3]	1.2 [3]
Joint Services Advertising		0	1.3 [14]	2.55 [14]	3.4 [12]	5.0 [13]
Minority Targeted Advertising		0	1.23 [13]	1.23 [7]	1.23 [4]	2.0 [5]
National Advertising Programs		0	1.0 [11]	9.78 [53]	15.16 [55]	21.3 [56]
Total		0	9.3 [100]	18.61 [100]	27.6 [100]	38.0 [100]

X [Y]

Key

X = national program allocations in millions of dollars  
Y = percentage of budget level allocated by program

levels were in force. Table 2 demonstrates that for advertising, considerable change was made in the program allocations of various test levels. These decisions were made by the Navy Recruiting Command in conjunction with their national advertising agency. The consensus among a variety of reviewers was that the allocation schemes were very well grounded. These new allocations were then translated on a proportional basis into individual test markets.

For recruiters the allocation decision was more straightforward. The proposed changes in recruiter strength were determined not to be of sufficient magnitude as to alter the current basic allocation scheme. Hence proportional increases or decreases in recruiter strength were targeted for each recruiter treatment market. Targeted changes in recruiter strength in each market were then executed using the normal rotation process. A data collection and analysis methodology was also devised to control for recruiter experience level.

#### F. Delivery

Translating design and execution objectives into reality in the marketplace is not trivial. Maintaining treatment objectives over a full year is more difficult still. Careful monitoring and control, as well as substantial Command attention was required throughout the period of the experiment. Tables 3 and 4 present the actual deliveries of treatment variables achieved.

The deliveries depicted in the two tables met the design and execution objectives of the research program extremely well. Independence, variance, and measurement were achieved. Conformity to test levels was essentially maintained. These achievements are more impressive in light of technical difficulties encountered. These included the inability to cut out magazine

**Table 3**  
**DELIVERY OF TREATMENT VARIABLES**

Advertising Treatment

26 Intervention Markets, October 1979-September 1980  
(Average dollar expenditures per month per 1,000 target population males)

	Very Low Advertising Market	Low Advertising Market	Normal Advertising Markets	High Advertising Markets	Very High Advertising Market
Navy National Advertising	5.07	7.45 (6.20 to 8.71)	27.73 (8.93 to 60.85)	89.71 (46.35 to 116.37)	73.95
Navy Local Advertising	4.84	18.59 (7.8 to 26.71)	19.11 (6.93 to 47.38)	27.66 (21.56 to 40.50)	29.70
Total Controlled Advertising	9.91	26.04	46.84	117.37	103.65

Joint Services Advertising	55.67	62.91	62.77	59.24	71.32
Competitive Advertising	77.65	116.48	105.30	116.68	109.36
Total Reported Military Advertising	143.23	205.43	214.91	293.29	284.33
Navy Recruiters per 1,000 Target Population Males	.295	.281	.309	.310	.480

Parentheses denote range

Table 4

DELIVERY OF TREATMENT VARIABLES

Recruiter Treatment

26 Intervention Markets  
October 1979 to September 1980  
(Average Recruiters per Month per 1,000 Target Population Males)

	Low Recruiter Markets	No Change Markets	High Recruiter Markets
Navy Recruiters	.241 (.131 to .329)	.330 (.236 to .480)	.349 (.271 to .672)
Other Service Recruiters	.546	.547	.653
Total Recruiters	.787	.877	1.002
Average Total Navy Adver- tising Dollars (National and Local) per 1,000 Target Population	55.48	59.70	47.59

Parentheses denote range

advertising in low treatment markets or to increase it in high markets, the continuation of officer-targeted advertising in all markets, and the vagaries of household viewing patterns. Conformity to recruiter treatments required combating attrition from recruiting duty, failure at recruiter school, injury and illness among recruiters, as well as other human and personnel difficulties.

#### G. Analysis

A substantial and detailed data base was developed for each market (ADI) involved in the field experiment. Data was collected in both treatment and control markets for each month of the intervention period. Table 5 presents an overview of the data collected about each market.

In addition, a separate data-set comprised of coded responses to the survey questionnaires was accumulated. Approximately 8,000 completed, returned, and coded questionnaires are included in this set.

Four separate analyses of the experimental data were conducted using appropriate components of the data base. These analyses are listed below.

1. Analysis of Variance (ANOVA) was conducted to investigate the main effects of advertising and recruiter strength treatments, explore a variety of co-variates, and investigate interaction effects between advertising and recruiters.
2. Aggregate Cross-Sectional demand equation models were fitted to the data since actual deliveries of treatment conditions were continuous rather than discrete. Data were aggregated across the entire period of observation (one year) to maximize independence and enable the derivation of long run elasticities.

Table 5  
DATA BASE OVERVIEW

Category	Data Elements
Military Enlistment Contracts	Department of Defense enlistment contracts and Navy enlistment contracts disaggregated by high school graduation status, mental group categories, gender, and race.
Environmental Factors	Employment and unemployment among the labor force in the markets, income, degree of urbanization, and racial representation in the markets.
Navy Recruiting Marketing Factors	Total number of Navy recruiters by person and by person month; recruiters beginning or ending their duty tours; DEP position as a percent of quota; Navy and joint service advertising dollar expenditures and delivered impressions by media type; Navy local advertising expenditures.
Competitive Factors	Recruiters and advertising expenditures as reported by the Army, Air Force, and Marines.

3. Ratio analyses were conducted to introduce a dynamic dimension to the analyses. Furthermore, observations were standardized by the mean and variance of each market's past (pre-intervention) performance.
4. Moving Cross-Sectional and Pooled Time Series/Cross-Sectional models were fitted to the data. This enabled the examination of lag structures for several of the key variables, and the possibility of the time varying effectiveness of each.

Finally, questionnaire data was analyzed by examining the wave to wave change in the responses of interest. In this way each market or treatment cell served as its own control.

Key results from both the experimental and questionnaire analyses are presented in the next section of this report. It should be mentioned that compilation of the data bases described above can be considered as an important by-product of this research program. Investigation of a variety of supplementary issues should be quite feasible from this data.



### III. SUMMARY OF KEY FINDINGS

This section summarizes the results of the one-year controlled field experiment in which the levels of field recruiters and advertising budget were systematically varied by the Navy Recruiting Command. The numbers of Navy and military enlistment contracts achieved in the treatment markets were analyzed with respect to these systematic variations. In addition to the experimental treatment, a two-wave survey questionnaire was administered in selected experimental markets. Both the specified experimental treatments and the survey program were effectively delivered by the Navy Recruiting Command. Analysis of the questionnaire responses was conducted and is integrated with the experimental results. Key findings from these analyses are reported below, classified into categories as follows:

1. Findings related to the two experimental variables, advertising expenditure and recruiter strength;
2. Findings related to other variables of the recruiting process, such as relative shares among the services, and recruiting quotas;
3. Effects on recruiting efforts of factors such as unemployment rates, which are outside the control of the recruiting system;

Finally, computations of marginal costs per enlistment contract for recruiter and advertising expenditures are summarized. The section ends with several cautions for interpreting these results.

- 
- 
1. Recruiter strength was observed to have significant effects on the number of enlistment contracts obtained.
- 
- 

Enlistment Effects: Highly significant relationships between the number of recruiters present and the number of enlistment contracts signed

were observed for all Navy contract types investigated. These relationships were observed through each of the four methods of analysis employed, except for enlistment contracts signed by Black individuals which was found in only one method.

Market Expansion: Very strong indications of market expansion as well as "brand switching" were evident for increased Navy Recruiter levels. That is, increasing the numbers of Navy recruiters increases the Navy's relative share of enlistments -- and it also increases the total number of military enlistment contracts obtained.

Learning Period: A four to six month learning period for newly-assigned Navy recruiters was found. Enlistment contract production for new recruiters during this period is substantially less than that of more tenured recruiters. This suggests that a lagged response to new recruiter input should be anticipated by military manpower planners.

De-Learning Period: A "de-learning" period was noted for Navy recruiters who expected soon to leave recruiting duty. In one analysis, enlistment contract production fell off sharply beginning about one year before tour rotation. This phenomenon (should it continue despite efforts to correct it) would greatly exacerbate the productivity loss incurred by rotating recruiting duty among other military assignments, because recruiters would be performing at below-average rates for roughly one-half their duty tours.

Intermediate Measures: Statistically significant differences on a broad range of intermediate measures were observed when markets with increased recruiter strength were compared with markets with decreased recruiter strength and/or when pre-recruiter samples were compared with post-recruiter samples. These intermediate measures include:

- (a) Reported contact with military recruiters
- (b) Reported perceptions of the Navy
- (c) Stated intentions to take the Armed Forces qualifying test battery
- (d) Reported length of enlistment contracts signed

Market Segments: Distinct segments of the youth population can be distinguished by their attitudes toward various career goals. Variations in recruiter strength are associated with differences in the proportions of Navy enlistees drawn from these segments. It can be inferred that Navy recruiters are relatively more effective in recruiting individuals with certain life or career goals.

- 
2. Advertising expenditures were observed to have significant effects on the number of enlistment contracts obtained.
- 

Enlistments: Statistically significant relationships between the number of several types of enlistment contracts signed and several types of advertising expenditures, including positive effects of:

- (a) Navy local advertising with respect to Navy high school diploma graduate enlistment contracts (56.4% of all contracts observed were high school diploma graduates)
- (b) Joint Services advertising expenditures with respect to Navy enlistment contracts signed by individuals classified in mental groups I through III upper (43.6% of all contracts observed)
- (c) Total reported Armed Services advertising expenditures (joint and individual services) with respect to total Defense Department enlistment contracts

Market Expansion: Strong indications of "market expansion" as well as "brand switching" were evident for increases in several categories of advertising expenditures.

Lagged Effects: Very small (but statistically significant) effects for Navy national advertising expenditures on enlistment contracts were observed for some periods and with respect only to non-high school diploma graduate enlistment contracts (69.0% of all contracts observed). The observations suggest that the effects are "lagged", that is, they occur from three to four months after advertising treatment.

Intermediate Measures: Virtually no statistically significant differences on a broad range of intermediate measures were observed when markets which received increased levels of Navy advertising expenditures were compared with markets which received decreased Navy advertising expenditures. The intermediate measures include:

- (a) Stated awareness of military or Navy advertising (awareness of military advertising approached 80% of respondents regardless of treatment)
- (b) Reported perceptions of the Navy
- (c) Stated intentions to join the military or Navy
- (d) Reported contact with military or Navy recruiters
- (e) Reported length of enlistment contract signed
- (f) Stated likelihood to progress in the recruitment process

Market Segments: Distinct segments of the youth population can be distinguished by their attitudes toward various career goals. Significant differences in the relative proportions of these segments among those who signed Navy enlistment contracts are associated with variations in advertising treatments. It can be inferred that Navy advertising has a differential impact on the identified segments.

- 
3. Other factors endogenous to the recruiting system were observed to have effects on the number of enlistment contracts obtained.
- 

Delayed Entry Pool: A strong effect of Delayed Entry Pool size as a percent of quota was observed for high school diploma graduate and upper mental group enlistment contracts. Reduced relative DEP positions were significantly associated with lower contract achievement for these types of enlistment contracts. The converse was found for increased relative DEP positions.

Prior Market Share: The relationship between achieved enlistment contracts and both controlled and uncontrolled variables is significantly different in markets in which the Navy has had a large market share as compared to markets in which the Navy's share has been smaller. This suggests that marketing efforts may have differential effects between these market types.

Prior Military Enlistment Level: Demand equation models of Navy enlistment contract performance fit the data substantially better in markets where the level of military enlistments had been low in the past when compared with markets in which military enlistments had been high in the past. This phenomenon was not observed for DOD contracts in general. This suggests the possibility that Navy enlistment contracts in "high level" markets are being artificially constrained by the goal or quota system applied to these markets.

Diminishing Returns: Non-linear exponential models provided better fits to the data in the aggregate than did linear models. This is broadly

indicative of diminishing marginal productivity (in terms of enlistment contracts) of inputs (recruiters and advertising, for example).

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4. Broader socio-economic factors outside the direct control of the Navy or Armed Forces recruiting system had significant effects on enlistments.
- 

Unemployment Rates: Unemployment rates among the general population in treatment markets had a strong impact on Navy recruiting efforts. Armed Forces recruiting can be characterized as counter-cyclic with higher unemployment rates associated with higher rates of enlistment. The ratio of these rates is estimated at about five to one. That is, an increase in the unemployment rate of one percent is estimated to lead to a five percent increase in Navy enlistments. It should be further noted that this ratio would be substantially magnified if fleet re-enlistment (retention) decisions are also counter-cyclical. If the effect of unemployment on retention were to be the same as on recruiting, then a one percent change in the unemployment rate could be expected to induce a ten percent change in enlistment achievement--the five percent change in first enlistments plus the estimated change in recruiting requirements determined by the change in fleet retention rates.

Educational Enrollment: School status as well as employment status among the general youth population seems related to enlistment activity. Roughly 50 percent of individuals sampled who were taking the Armed Forces qualifying test battery and approximately 70 percent of those sampled who signed enlistment contracts during

our sample period (June 1979 and June 1980) reported that they were not working and not in school. This compares to about 10 percent of young people in general who were sampled at the same times. This may imply that recruiting will be affected by changes in policies affecting educational access (such as student loan provisions).

Urbanization: Small effects of urbanization and income were observed for high school diploma graduate enlistment contracts. It seems likely that both income and high school performance are systematically related to urbanization. Higher levels of such enlistment contracts were observed for more urban markets.

Gender Effects: Men and women respond to the recruiting environment in very different ways. Female questionnaire respondents were less effected by recruiter contact and had a significantly different response to advertising than male respondents. In general, women's perceptions of the Navy improved where advertising was decreased. Further, men and women differed significantly in their responses to a majority of questionnaire items. This implies that marketing campaigns need to be evaluated with respect to the gender-related objectives of defense planners.

### Marginal Cost Summary

Marginal costs for achievement of enlistment contracts of various types through recruiting resource expenditures were estimated for those resources which had consistent and significant effects on contracts. Elasticities derived from cross-sectional analyses were used for this purpose. Cost estimates from this type of analysis can be viewed as long run estimates. The key results presented below are valid in the ranges of variation of the recruiting resources tested or observed. The ranges vary from a ratio (highest spending to lowest spending) of twenty-to-one for Navy national advertising, down to a ratio of two-to-one for joint services advertising.

Recruiters show the strongest and most consistent effects on enlistment contract. Hence, investments in recruiter resources bear relatively less financial risk. They are also the most expensive resource input at the margin. A cost per enlistment contract for recruiter input was estimated at about \$2,000 compared with an average cost of marketing inputs per enlistment contract across our observations of about \$1,000. The marginal cost per contract achieved through recruiter input rises steadily with "quality" constraints. A high school diploma graduate enlistment contract is estimated at \$3,300 and a mental group one or two enlistment contract at about \$6,300. The above calculations use a cost per recruiter estimate of \$30,000 per year.

Advertising effects on enlistment contracts are not as strong or consistent as those for recruiters. These expenditures are thus "riskier". Nevertheless, where effective, advertising is highly efficient. The lowest marginal cost estimated is for Navy local advertising



with respect to Navy high school diploma graduate contracts. The cost is estimated at \$200 per contract. The marginal cost per Navy enlistment contract for Joint Services advertising expenditures is generally under \$1,000. Marginal costs for Navy national advertising were not estimated because aggregate effects were very small and inconsistent for this campaign. Hence marginal costs for this resource would be exceptionally high.

#### Cautions Needed

Finally, the reader should observe several cautions in evaluating these findings.

- The general market conditions under which this research was conducted condition, to some extent, the nature of the findings. It is doubtful, for example, that these analyses would be appropriate or useful as policy guidelines during time of war.
- The extrapolation of these results beyond the range of data observed is unwarranted.
- More subtly, implicit in the findings and research conducted are a substantial number of management decisions and assumptions. These decisions include: the creative and media allocation strategies in advertising; the underlying deployment strategy for recruiters; and an entire set of policies and control mechanisms for goal setting, performance evaluation, and feedback. A different set of decisions with respect to these factors could be expected to yield different results. Since the introduction of the All Volunteer Force steady progress with respect to these decisions has been evidenced by the Navy Recruiting Command. This progress has been abundantly clear

during the period of this research effort. It is our hope that as additional, systematic feedback is provided to the recruiting management system, better decisions and better-grounded assumptions will continue to emerge.

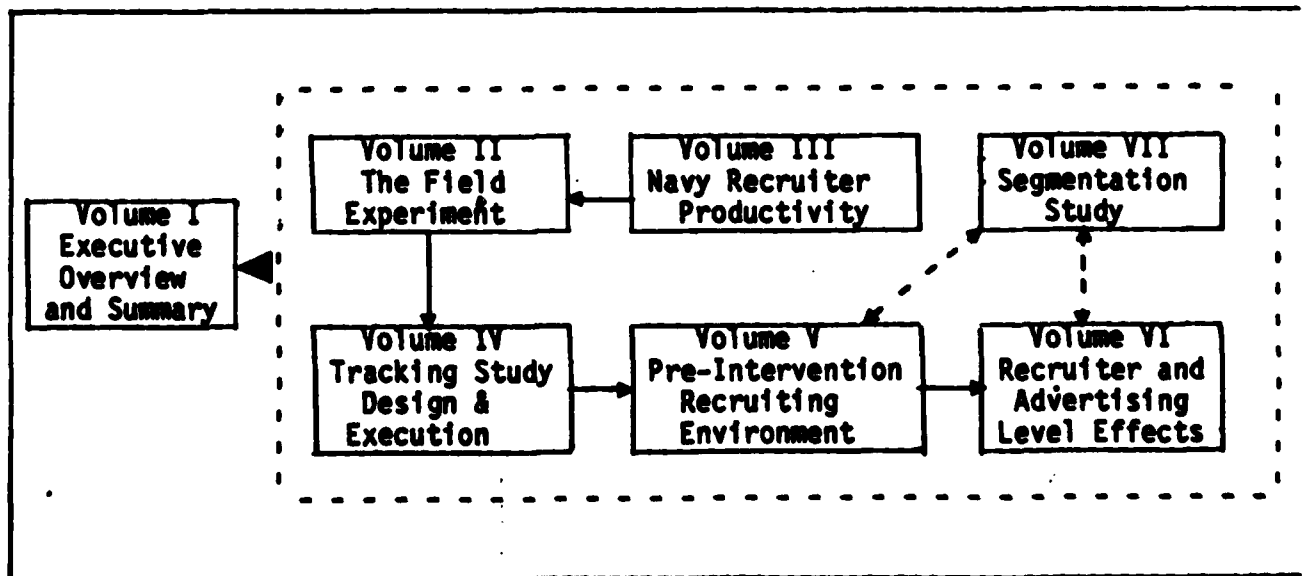
#### IV. A NAVY ENLISTMENT FIELD MARKETING EXPERIMENT

##### Guide to the Volumes of this Report

The Wharton Applied Research Center has prepared seven volumes of reports on the Navy Enlistment Field Experiment. The series begins with an overview and summary of hypotheses, experiments, and significant results. Volume II contains an integrated report on the experimentally-tested relationships between controllable marketing variables and Navy accessions. Volume III presents a related investigation of Navy recruiter productivity.

The remaining four volumes present descriptions and analyses of a "tracking" study designed to measure the relationships between demographic and "intermediate" attitudinal and perceptual measures and controllable marketing efforts.

The relationships between the various volumes are shown in the diagram. As an aid to the reader, a brief description of the contents of each volume is presented below.



Volume II. The Field Experiment: Design, Execution, Delivery and Analysis -

This volume contains a detailed discussion of the background and objectives of the research. The development of an appropriate experimental design, the choice of variables and test markets, the levels of experimental treatments and so forth is also discussed. The execution of the experimental protocol is recounted. This is followed by a detailed description of the collected data, and of analyses including aggregated ANOVA and a variety of multiple regression models. An investigation of month-by-month response rates using standardized log ratio analysis and monthly as well as cross-sectional time series analysis is also reviewed.

Volume III. An Empirical Investigation of Navy Recruiter Productivity -

A discussion of the problems and issues of salesforce productivity measurement begins this volume. After presentation of the data on which the investigation is based, observed "learning" and "de-learning" effects are described. Other significant phenomena are also discussed, among them the effects of recruiting goals, differences between regions and involuntary extensions of recruiters' duty tours. The observed frequency distribution of recruiter productivity is presented. This is followed by a discussion of recruiter performance forecasting, and by suggestions for future research.

Volume IV. The Wharton-Administered Navy Tracking Study: Design and

Execution - This volume outlines the rationale and methodology for collecting and evaluating so-called "intermediate" measures of marketing effectiveness. Selection of data collection vehicles, choice of measurement variables and ranges and preparation of survey instruments are discussed. Response rates and other relevant details of the mechanics of data collection are outlined.

An appendix contains copies of the survey instruments.

Volume V. The Wharton-Administered Navy Tracking Study: Pre-Intervention Recruiting Environment - Demographic, attitudinal and perceptual data are presented in this volume (a) for the at-large population of young people, as sampled by telephone survey, and (b) for participants in the recruiting cycle itself, as sampled through written questionnaires. A baseline is thus established for understanding of further studies. The cross-sectional view of the recruiting process leads to insights into its mechanisms. Complete tabulations of the collected data are appended.

Volume VI. The Wharton-Administered Navy Tracking Study: Hierarchical Analysis of Recruiter and Advertising Treatment Level Effects - This volume focuses on measurement of changes in intermediate variables -- attitudes and perceptions -- which may be ascribed to military marketing activities. Differences across the experimental period are evaluated with respect to variations in advertising and recruiter strength levels. Cross sectional differences using post-experimental data are also examined. An appendix presents complete tabulations of the examined data.

Volume VII. The Wharton-Administered Navy Tracking Study: A Segmentation Approach - Multivariate cluster analysis has been applied to the collected attitudinal data to determine the nature and size of identifiable market segments and the at-large population of young people. This volume outlines the technique and results of the study, then evaluates the differential rates at which the observed segments proceed through the Navy recruiting process. Differences which may be associated with variations in experimental treatment conditions are also identified.

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